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Interactions engineered for spin-orbit coupled atomic gases

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Ultracold gases of interacting spin-orbit coupled fermions are predicted to display exotic phenomena such as topological superfluidity and its associated Majorana fermions. Here, we experimentally demonstrate a route to strongly-interacting single-component atomic Fermi gases by combining an s-wave Feshbach resonance (giving strong interactions) and spin-orbit coupling (creating an effective p-wave channel). We identify the Feshbach resonance by its associated atomic loss feature and show that, in agreement with our single-channel scattering model, this feature is preserved and shifted as a function of the spin-orbit coupling parameters. With: R. A. Williams, M. C. Beeler, L. J. LeBlanc, and K. Jimenez-Garcia